## Math Matters!



Thised Geqede
Summep Practice Packet

Colonial School District

Promoting a Culture of Collaboration, Innovation and Inspiration

June 2019

Dear Parents/Guardians,


First, we would like to thank you for all of the additional support you offer at home. Education is a true partnership between school and family that is essential to a child's success.

As this school year comes to a close, we wanted to again encourage you to continue to reinforce and foster the mathematical skills and practices that have been developed this year by scheduling time for your child to work through this summer math packet. The activities were selected by our grade level experts with the key mathematical concepts of the school year in mind. The ultimate goal is to reinforce and strengthen the skills that will serve as building blocks for future learning. Also, remember that your child's DreamBox Learning account remains active over the summer months. This is another resource that will help your child continue to progress during the summer months. In addition to these resources, there are a wealth of others on our district website.

Wishing you a relaxing, yet exciting, math-filled summer!
Sincerely,

The Curriculum Department

## Summer Math Fun

| Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Check out math titles if you're at your local library this month - | Look on the NCTM web site https://illuminations.n ctm.org/ and check the 3-4 box. Look for games for multiplication. | Choose a game that will help you with your addition facts. | Count the coins in your parent's wallet or pocket. How much would you need to make $\$ 5.00$ ? | Make a number collage. Use old newspapers to find lots of numbers. Order them from least to greatest. Explain what you did. | Play Some Sums from your Math Games list. |  |
|  | Grab a handful of cereal. Estimate how many pieces you think you can hold? Count them. Grab another handful. Add the two mentally and on paper. | Math Game Night! Play a game with your family. Grown-ups choice. | Look on the NCTM web site https://illuminations.n ctm.org/ and check the 3-4 box. Type in geometry to play math games. | See Ideas for Math at Home. Try a time activity. <br> Choose a game that will help you with your multiplication facts. | Math Game Night! Play a game with your family. Your choice. |  |
|  | Choose a game from the list to work on basic facts for subtraction. | Count the coins in your parent's wallet or pocket. How much would you need to make $\$ 10.00$ ? | See Ideas for Math at Home. Try a time activity. Choose a game that will help you with your multiplication facts. | Line up your family members from youngest to oldest. Who is first? Who is last? Find the difference in their ages using mental math. | Choose a game from the list to work on basic facts for addition and subtraction. |  |
|  | Choose a game that will help you with your multiplication facts. Test yourself. | Math Game Night! Play a game with your family. Your choice. | Web fun! Free choice. Also, choose an activity from Ideas at Home. | Play Guess if You Can from More Ideas for Math at Home. | Math Game Night! <br> Play a game with your family. Your choice. |  |
|  | Play Some Sums from your Math Games list | Math Game Night! Play a game with your family. Your choice. | Choose a game that will help you with your multiplication facts. Test yourself. | Choose a game that will help you with your multiplication facts. Test yourself. | Test yourself. Do you know your multiplication facts to products of 50 ? |  |

## Ideas for Math at Home

Math is all around us...we encounter it everyday as we go about our lives. Here are some opportunities for you to use these encounters to help your child explore math this summer.

Good Clean Fun!
Have your child help sort the la to be washed. Explore all the ways it can be sorted. Practice counting out loud while sorting...how many shirts are in the load of laundry?

## Rainy Day Math

Place a variety of small items in a container for your child to sort into piles: keys, buttons, etc. Ask how they are alike and how they are different. Extend the activity by using the items to solve math problems: i.e. if you have 3 big buttons and three small ones, how many buttons do you have altogether?

## Let Me Count the Ways...

Visit a restaurant. Identify the toppings for burgers (or pizza!). Ask your child to think about all the ways you can order a burger with three different toppings from the list. Ask him to share some strategies for solving the problem.

## Grocery Math

Make a game out of putting away groceries. As you empty the bags, grour the items according to some common feature. You might, for example, put together all the items that go into the refrigerator or all the canned goods. Pla "Guess My Rule" - your child has to guess what rule you used for grouping the groceries.

## How Long Does it Take?

Explore time by asking your child to estimate and then time how long it takes to complete different household activities such as making a bed, setting the table, taking out the garbage, washing the dishes.

## Coupon Math

Ask your child to help you clip coupons from the Sunday paper. Use the coupons to create math computation problems - find the total of several coupons. Look up prices of grocery items in the store flyers and ask your child how much the item will cost if you use a coupon.

## More Ideas for Math at Home

## Money's Worth

Here are some simple activity ideas you can use at home to provide opportunities and talking about math.

Give your child a chance to answer riddles such as "I have three coins in my pocket. They are worth 7 cents. What do I have?" For older students, ask more challenging questions such as "I have six coins in my pocket. They are worth 30 cents. What could I have?" or "The coins in my pocket total 11 cents. How many coins could I have?"

## Guess if You Can

Let your child think of a number between a stated range while you try to guess the number. Ask questions such as: is it more than 50 ? Is it an even number? Is it greater than 20 but less than 40 ? Can you reach it by counting by 3's? After you guess the number, give the child a chance to ask question for your secret number.

## Hidden Coins

Secretly create a set of coins and count the total value. Cover some of the coins with your hand. Tell your child the total value of all the coins (visible and hidden) and ask him to tell you the value of the coins you have hidden. Take turns and allow your child to create a set of coins and challenge you.

## Number Search

Create a chart that lists the numbers from 1 to 50 . Write down each number as your child locates that number on a car license plate, a sign, a building or other objects in your community. Include "number words" that you see such as "one-stop shopping," "two-day service," "buy one, get one free," or "open seven days a week."


## Math Games

## Learning and Family Fun all in One!

## Some Sums (2 players)

Materials: Dice and Number Cards (1-9)


Focus: Grades 1, 2, and 3 (Addition and strategy use)
$7+2=9$

Here's a fun way to help your child become fluent with basic addition facts and strategies for figuring out different sums that make up the same number. Encourage your child to share the strategy he/she used to find the sums as you play.

- Lay out the nine number cards $(1-9)$ face up in a row. Player 1 rolls two dice and add them together to find the sum. In the row of cards, find a combination of two or more cards whose sum is the same as the sum of the dice; Turn these cards face-down.
- Player 1's turn continues until there are no more cards left in the row to make the sum of the number rolled. Player 1 adds up the total of the cards remaining in the row; this is his score for the round. (Be sure to explain the strategy used!)
- It is then Player 2's turn to do the same.
- For each round the goal is to be the player with the lowest score.


## Two-Fisted Pennies Game (2 or more players)

Materials: 10-20 pennies for each player (or other counters)
Focus: Grades K and 1 (number combinations / math facts)


Players count out 10 pennies, and then split them between their two hands. (help identify right and left). "My left hand has 1 and my right hand has 9; left hand 3 and right hand 7; left hand 4 and right hand 6; and so on. Record the various splits for any given number on chalkboard. i.e. $3+7=10$ Continue to play using different total numbers of pennies $(9,12,20)$

Variation: (mostly appropriate for gr 1) Players take turns grabbing one part of a pile of pennies (up to 20). The other partner takes the remainder of the pile. Both players count their pennies, secretly. The partner making the grab uses the count to say how many pennies must be in the partner's hand. ("I have 12, so you must have 8".) Change the number of pennies in the pile to practice facts for other numbers.

## Break the Eqgs!

Materials: Styrofoam egg carton (no holes); 2 beans, marbles or similar small object Recording Sheet

Focus: Grades 1 and 2 (Addition facts) Grade 3 (Addition, Multiplication facts)


Write the numbers 0 through 10 in the bottom of the cups ot the egg carton (use the number 9 twice). Place the 2 marbles in the egg carton. Close the lid and shake the carton; Open the lid and add (or multiply) the two numbers in which the marbles have landed.
A terrific way to practice math facts without flash cards!

## Race Me (2 players)

Materials: Deck of Playing Cards with face cards removed
Focus: Grades 1 and 2 (Addition, Subtraction and strategy use)

$$
9+1=10
$$



Deal out the cards so that each player has the same number. Decide which operation you will use for the game (addition, subtraction or multiplication.) Both players quickly turn over their top card and place it on the table. When the two cards are down, see who can add, subtract or multiply (grade 3 only) the two cards first. Whoever says the correct answer first keeps the cards. At the end of the game the players count their pairs of cards.

This is an excellent time to discuss which number is greater or less and how you know. Questions involving even and odd numbers, ten more or ten less (substitute 20 or 30) using the total number of cards will get players discussing numbers and strategies.
> Example: Lets say I have 7 pairs, is 7 even or odd and how do you know? If I add ten or twenty to my 7 what number am I at? Prove that to me. You could ask questions involving total number of cards which would be 14 and ask the same type of questions. Ask how far from 100 and discuss your strategies for solving. Keep the game about the learning and discourage winning or losing.

Encourage your child to use addition, subtraction, or multiplication strategies. NO FINGERS! Fingers prevent the brain from thinking logically unless they are used to keep track of tens. Your goal is to support your child in learning strategies that are used mentally. Counting on fingers is not a mental strategy and it will not help them gain computational fluency.

Parents: You may need to prompt your child.

- Try saying something like this: "What strategy could you use to help you?" "Could you use make 10, doubles, doubles + one and so on?"

Salute! (3 players)
Materials: Playing Cards, no jokers (Ace =1, face cards = 10)

Focus: Grades 1 and 2 (Addition, Subtraction and strategy use)


Grade 3 (Addition, Subtraction, Multiplication, and strategy use)

- The game is played with 2 Players and a Dealer. The Dealer deals the entire deck of cards out to the Players.
- The Players count, "1, 2, 3, Salute!" As they say, "Salute!" they bring the first card in their piles to their foreheads, without looking at it, in a kind of salute.
- Next, the two Players look at one another's foreheads as the Dealer adds or subtracts the numbers. The Dealer says, "The sum is $\qquad$ " or "The difference is
$\qquad$ ". (This is great for vocabulary development.)
- Then, the two Players try to be the first to guess their own number by adding, subtracting, or multiplying (gr 3 only) the other player's number from/to the sum, difference, or product. If they do it correctly, they take the other Player's card and the process repeats.
- After all cards have been played, the Player with the most cards becomes the Dealer.

Encourage your child to use addition, subtraction, or multiplication strategies. NO FINGERS! Fingers prevent the brain from thinking logically unless they are used to keep track of tens. Your goal is to support your child in learning strategies that are used mentally. Counting on fingers is not a mental strategy and it will not help them gain computational fluency.

## How Many Numbers Can We Make?

Materials: Number cards, pencil, and paper


Focus: Computation Grades 1, 2, and 3 -- can vary depending on skill level of child. Child should not be frustrated. (gr 1 and 2 would normally focus on using addition and subtraction only).

Give each player a piece of paper and a pencil. Using the cards from 1 to 9, deal four cards out with the numbers showing. Using all four cards and a choice of any combination of addition, subtraction, multiplication, and division, have each player see how many different numbers a person can get in 5 minutes. Players must write down the equations used for each number. Players get one point for each answer. For example, suppose the cards drawn are 4, 8, 9, and 2. What numbers can be made?

Materials: Number cards, pencil, and paper


Focus: Place value; Comparing numbers
Grades 1, 2, and 3 -- can vary depending on skill level of child. Child should not be frustrated. (typically, for a gr 1 student create 2 or 3-digit numbers; gr 2 create 3 or 4-digit numbers; gr 3 create 3, 4 or 5-digit numbers)

This game is played with cards from 1 to 9. Each player alternates drawing one card at a time, trying to create the largest 4-digit number possible (size of number varies for each child, see above). As the cards are drawn, each player puts the cards down in their "place" (thousands, hundreds, tens, ones) with the numbers showing. Once placed, a card cannot be moved. The player with the largest 4-digit number wins. For example, if a 2 was drawn first, the player might place it in the ones' place, but if the number had been an 8 , it might have been put in the thousands' place.

## Number Eqg-stravaganza!



## Materials: Styrofoam egg carton

 piece of card stock or construction paper (can also use 4 "bingo" chips)Focus: Place Value, creating numbers Grades K-3 ** level of play varies based on skill level of child


- Write the numbers 0 through 9 in the bottom of the cups of the egg carton (you will need to write 2 numbers twice in order to fill the cups).
- Cut out 4 one-inch circles from a piece of card stock. Write "ones" on one of the circles, "tens" on another, "hundreds" on the third, and "thousands" on the last. **
- Place the circles in the egg carton. Close the lid and shake the carton; Open the lid write / say the number that is created.
- i.e. if the "ones" landed in the 2 cup, the "hundreds" in the 0 cup, the "thousands" in the 8 cup, and the "tens" in the 6 cup, the number created is 8,062.
** Important Note: Gr K should use only 2 circles (tens and ones) to make 2-digit numbers; Gr 1 start with 2 circles, then progress to 3 (add "hundreds" circle. Gr 2 and 3 start with 3 circles and progress to four circles (add "thousands")


## Fifteen Number Cross-Out (2 players)

Materials: Pair of Dice; paper and pencil piece of card stock or construction paper (can also use 4 "bingo" chips)

Focus: Grades 1 and 2 (Addition fact fluency; discuss thinking)


## To Play:

Players will create a list with 15 numbers. Five of the numbers must be 5's. The rest of the ten numbers can be any digit from 1 to 9 . See example:

5

Player 1 rolls the dice and makes a decision -

- Will you add the two digits together and cross out the total sum on your list?
- Will you cross out the digit represented on one of the dice and cross out the other digit on the other dice?
- Will you cross out two other numbers that equal that number?

Example: I roll a 6 and a 2. That equals 8. I have to either:

- cross out the 8 (total sum)
- cross out the 6 and the 2 (digits shown on the dice)
- cross out a 7 and 1, OR a 4 and a $4, ~ O R ~ a ~ 5 a n d ~ a ~(o t h e r ~ w a y s ~ t o ~ m a k e ~ 8) ~$
- I must explain to my partner what I am doing.

Player 2 rolls the dice and is faced with the same decisions -

If, on your turn, you are cannot cross off any of the numbers you have left, you lose that turn and it's the other player's turn.

The game ends when all of your numbers or your partner's numbers are crossed out ;)

NUMBER CARDS
(For use with games)

| 1 | 2 | 3 | 4 |
| :--- | :--- | :--- | :--- |
| 5 |  |  |  |
| 6 | 7 | 8 | 9 |
| 1 | 2 | 3 | 4 |
| 6 | 7 | 8 | 9 |
| 1 | 2 | 3 | 4 |
| 6 | 7 | 8 | 9 |

Name $\qquad$

Break the Eggs

Number Sentences

|  |  |
| :--- | :--- |
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## Commercial Math Games for Learning

Math games can be a wonderful source for developing mathematical reasoning while practicing basic facts and honing reasoning and problem solving skills. Repeatedly playing these games supports student learning and deepens understanding.
"Parents often ask me to recommend some good games that encourage math play at home. It's a question I love to be asked. How math is experienced in the home has a big impact on how children do with math at school. I'm always looking for challenging and fun math games-games that engage children in mathematical reasoning and help them experience the compelling nature of a good math challenge. Most of these games are available in toy stores, Wal-Mart, Target, Kmart, or Kohls for \$5 to \$15."

## ST17 <br> Set: <br> 㫛 family (ages 6 to adult). Adults, be forewarned that it can be humbling to play this game with youngsters!

Tangos: A game that focuses on spatial relationships and that challenges the whole family, young and old alike.


Mastermind: A game of logic enjoyed by both children and adults. Look for a version of Mastermind for younger children ages 6 and up.


Cribbage: A wonderful card game played on a pegged board that develops skill in adding series of small numbers. The game is enjoyable for children of all ages.


Dominoes: A game of strategy and numbers that children as young as 4 years of age can play as
 recognition game. Yet the regular game of dominoes is challenging for adults as well.

Mancala: A challenging African stone game of logic for adults that can be adapted to meet the needs of children ages 5 and up.


Equate: A game for reinforcing computation with whole numbers, decimals, and fractions. I haven't played this yet, but my nieces and nephews tell me it is challenging and fun.


Checkers / Chess: Great games for developing skill with logical reasoning.


## Our family likes to read together...

- Are there any good books that make math part of the story?

Math turns up in the most unexpected places! You'll find it hidden between the covers of almost any book. Children's books are great places to find math! This list is only a starter; check out your local bookstore or library for these and other engaging books.

You'll soon start finding math in everything you read. Talking about the math within the pages is just one more way to bring your family together. Enjoy!

## Counting:

Monster Math (Miranda)
Spunky Monkeys on Parade (Murphy)
100 Ways to Get to 100 (Palotta)
Counting on Frank (Clements)
The Wolf's Chicken Stew (Kasza)

Addition and Subtraction:
A Bag Full of Pups (Gackenbach)
A Collection for Kate (Derubertis)
Mission: Addition (Leedy)
More, Fewer, Less (Hoban)

Multiplication and Division:
Amanda Bean's Amazing Dream (Burns)
The Doorbell Rang (Hutchins)
The Great Divide (Dodds \& Mitchell)
How Many Ants? (Brimner)

Time:
Just a Minute (Slater)
Pigs on a Blanket (Axelrod)
Time to.... (McMillan)

## Measurement:

Inch by Inch (Lionni)
Measuring Penny (Leedy)
Twelve Snails to One Lizard (Hightower)

## Number Sense:

Among the Odds and Evens (Turner)
Bats on Parade (Appelt)
How Many Feet? How Many Tails (Burns)
Even Steven and Odd Todd (Cristald)
Math in the Bath (Atherlay)

## Money:

The Coin Counting Book (Williams)
Bennie's Pennies (Brisson)
Monster Money (MacCaron)
Pigs Go to Market (Axelrod)
Pigs Will Be Pigs (Axelrod)
The Great Pet Sale (Inkpen)

Geometry:
Shapes, Shapes, Shapes (Hoban)
The Greedy Triangle (Burns)
The Silly Story of Goldilocks \& the Three
Squares (MacCarone)
Grandfather Tang's Story (Tompert)
I Spy Shapes in Art (Micklethwait)

## Fractions:

Fraction Action (Leedy)
My Half Day (Fisher \& Sneed)
The Half-Birthday Party (Pomerantz)

## Our family likes to use the computer...

- Are there any good web sites that would support my child's learning?

The web is packed with terrific sites with engaging activities. You can make this a family event by sitting with your child to support their understanding as they play.

This list is only a starting point. Additional websites can be found on the District web page. As sites change periodically, some of these may no longer be available.

## http://www.sowashco.org/ro/pages/studentlinks/math/k-1math.htm

Many great math activities (K-1) in a variety of concept areas.

## http://www.sowashco.org/ro/pages/studentlinks/math/2-3math.htm

Many great math activities (2-3) in a variety of concept areas.

## http://www.internet4classrooms.com/skills_1st.htm

Variety of activities and skill practice. Click on appropriate grade level/Math

## http://illuminations.nctm.org/

Library of 94 online activities that help to make math come alive

## http://nlvm.usu.edu/en/nav/vlibrary.html

Variety of activities and virtual manipulatives sorted by grade level and topic

## http://www.mathcats.com/storyproblems.html

Many story problems at various skill levels

## http://www.battersupbaseball.com/index.html

Practice addition / multiplication math facts

## http://www.mathplayground.com/

Action-packed educational site. Lots of word problems and other activities

## http://www.usmint.gov/kids/games/

Great money games and activities

## http://www.aplusmath.com/Games/index.html

Math games in Java
Dreambox Learning: go to www.colonialsd.org; click on STUDENTS in the upper left-hand corner of the page; click on Elementary School then on Math Resources; click your elementary school to go to the Dreambox log in page; have your child enter their student id number for both username and password

## Parents as Questioners ?

## Making Sense of Mathematics Together

Mathematical investigations present new and sometimes unexpected mathematical situations, so the teacher cannot have taught the way to solve the problem in advance. The student needs to apply prior knowledge in ways that make sense to the situation. There may be many paths to follow and many outcomes, depending on the problem; the student must make his or her own plan for finding a solution.

Parents can assist their children to be independent problem solvers by becoming guides or questioners. They do not need to know how to solve the problem themselves, but can help the students think through the problem and make a realistic plan for solving it.

USE FREELY any questions that will help students think about the way they are tackling the problem:

- What have you tried so far?
- Is there another way to look at the problem?
- Can you explain this to me?
- What makes sense so far?
- Is this like any other problem that you have worked on in any way?
- What is it you are trying to do/solve/find out?

USE SPARINGLY those questions that tend to direct students' thinking:

- How might you organize this?
- Can you make a table of your results?
- Can you see any patterns?
- Have you tried smaller (or simpler) cases?
- How can you get started?
- Have you checked to see that the solution works?
- What would happen if . . .?

AVOID any hint or question referring to the particular problem:

- Do you recognize square numbers?
- Explore it like this, or try this . . .
- Why not try three counters?
- That's not quite what I had in mind . . .
- No, you should . . .


## Suggestions for Working with Math Facts



## Suggestions for Working with Math Facts



## Math Fact Triangles

Fact triangles are an effective tool for helping children memorize addition and subtraction math facts because of their emphasis on fact families. A fact family is a collection of related addition and subtraction facts that us the same 3 numbers. The fact family for the numbers 2,4 , and 6 consists of $2+4=6$;
$4+2=6 ; \quad 6-4=2 ; 6-2=4$.

## Addition facts:

To use Fact Triangles to practice addition with your child, hold the triangle so that the + sign and the word addition is at the top of the card. Use your thumb to cover the number at the bottom of the card.
Your child tells you the addition facts: $4+2=6$ or $2+4=6$.


## Subtraction facts:

To use Fact Triangles to practice subtraction with your child, hold the triangle so that the word "subtraction" is at the top of the card and the + sign is at the bottom of the card.
Use your thumb to cover one of the numbers in a bottom corner of the card.
Your child tells you the subtraction fact: 6-4 $=2$.
When you cover the other corner, the subtraction fact is 6-2 $=4$.


If your child misses a fact, flash the other two fact problems on the card and then return to the fact that was missed.
For example: Emily can't answer 6-2 = 4, Flash 4 +2 , then 6-4, and finally 6-2 a second time.

Make this activity brief and fun. Spend about 10 minutes each night over the next few weeks or until your child masters all of the facts. The work that you do at home will help your child develop an instant recall of facts and will complement the work that we are doing at school.







# Multiplication 

## \&

## Division

## Facts








